

Patent Claims

1. A method for monitoring a transmission of data packets between at least two network subscribers,  
5 with safety-based monitoring of an error-based limit value which is and/or can be predetermined, being carried out on the transmission medium for response to identified incorrectly transmitted data packets (1) and identified correctly transmitted data packets (1), characterized by a  
10 data record (22, 23) which is in each case expected by at least one network subscriber and which is used to determine whether data packets (1) have been transmitted incorrectly or correctly is transmitted within the payload data (2) in each data packet (1).
- 15 2. The method as claimed in claim 1, wherein an evaluation of identified incorrect data packets (1) and identified correct data packets (1) is carried out in each definable time interval.
- 20 3. The method as claimed in claim 1 or 2, wherein the ratio of identified incorrect data packets (1) to identified correct data packets (1) is formed.
- 25 4. The method as claimed in claim 1, 2 or 3, wherein address records (22) and/or check records (23) are used as expected data records (22, 23).
- 30 5. The method as claimed in one of the preceding claims, wherein the monitoring is carried out on the basis of a discrete transmission channel without any memory by means of a functional relationship, which is based on a Bernoulli distribution, between the probability of receiving an

incorrect data record of a specific length and a maximum error rate which can be predetermined.

6. The method as claimed in one of the preceding claims,  
5 wherein the product of an error rate which is or can be predetermined and the number of bits within the expected data record is defined as the error-based limit value.

7. The method as claimed in one of the preceding claims,  
10 wherein the monitoring is performed by at least one slave subscriber and/or at least one master subscriber.

8. The method as claimed in the preceding claim, wherein,  
15 in order to carry out the monitoring process, information is transmitted about identified incorrect and/or correct data packets from the in each case at least one waiting subscriber to at least one monitoring subscriber.

9. An apparatus for monitoring a transmission of data  
20 packets between at least two network subscribers, comprising means for safety-based monitoring of an error-based limit value, which can be and/or is predetermined, for response to identified incorrectly transmitted data packets (1) and identified correctly transmitted data packets (1),  
25 characterized by means for determining incorrectly and correctly transmitted data packets (1) on the basis of an expected data record (22, 23) which is embedded within the payload data (2) of each data packet (1).

30 10. The apparatus as claimed in claim 9, wherein the means for safety-based monitoring are designed to carry out an evaluation of identified incorrect data packets (1)

and identified correct data packets (1) in each definable time interval, and/or to form the ratio of identified incorrect data packets (1) to identified correct data packets (1).

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11. The apparatus as claimed in claim 9 or 10, wherein the means for determination respond to address records (22) and/or check records (23).

10 12. The apparatus as claimed in one of claims 9 to 11, wherein the monitoring means are designed for a discrete transmission channel without any memory, and, based on a Bernoulli distribution, form a functional relationship between the probability of receiving an incorrect data record 15 of a specific length and a maximum error rate which can be predetermined.

20 13. The apparatus as claimed in one of claims 9 to 12, wherein the product of an error rate which is or can be predetermined and the length of the expected data record is defined as the error-based limit value.

25 14. The apparatus as claimed in one of claims 9 to 13, wherein the means for determination are associated with slave subscribers, and the means for monitoring are associated with at least one slave subscriber and/or one master subscriber.

30 15. The apparatus as claimed in one of claims 9 to 14, characterized in that the means for determination are associated with network subscribers which are designed to transmit appropriate information to at least one monitoring subscriber in response to identified incorrect and/or correct data packets.

16. A network having an apparatus as claimed in one of claims 9 to 15.

5 17. The network as claimed in claim 16, comprising at least one bus system which is in the form of a ring, line, star and/or tree.

10 18. The use of a network as claimed in claim 16 or 17 for building control technology, for the process industry, for the manufacturing industry, for passenger transport and/or for operation of an automation system.